

This is a self-archived version of an original article. This version may differ from the original in pagination and typographic details.

Author(s): Tuunanen, Tuure; Lintula, Juuli; Auvinen, Annemari

Title: Unboxing Co-creation of Value : Users' Hedonic and Utilitarian Drivers

Year: 2019

Version: Published version

Copyright: © the Authors, 2019.

Rights: CC BY-NC-ND 4.0

Rights url: <https://creativecommons.org/licenses/by-nc-nd/4.0/>

Please cite the original version:

Tuunanen, T., Lintula, J., & Auvinen, A. (2019). Unboxing Co-creation of Value : Users' Hedonic and Utilitarian Drivers. In Proceedings of the 52nd Hawaii International Conference on System Sciences (HICSS 2019) (pp. 1406-1415). University of Hawai'i at Manoa. Proceedings of the Annual Hawaii International Conference on System Sciences.
<https://doi.org/10.24251/hicss.2019.171>

Unboxing Co-creation of Value: Users' Hedonic and Utilitarian Drivers

Tuure Tuunanen
Faculty of IT
University of Jyväskylä
tuure@tuunanen.fi

Juuli Lintula
Faculty of IT
University of Jyväskylä
juuli.m.k.lintula@jyu.fi

Annemari Auvinen
Faculty of IT
University of Jyväskylä
annemari.auvinen@jyu.fi

Abstract

Value co-creation through involving users in service processes via resource integration is a focal service research interest. However, studies often take a firm-centric or generic approach and overlook value co-creation from the point view of an individual user. We address this gap by adopting a qualitative research approach and laddering interviews (n = 113) to examine users' hedonic and utilitarian drivers for value co-creation behavior in five service system contexts. We argue that underlying differences exist among all service systems and contribute with a novel approach by depicting the differences in value-based motivations for users to co-create value. As practical implications, our findings suggest services should be designed according to users' value drivers rather than system types. Furthermore, we demonstrate how the consumer information systems (CIS) framework can be used to benchmark users' value co-creation behavior with specific service systems or to compare such behavior between different service systems.

1. Introduction

Co-creation of value is one of the key tenets of service-dominant logic (SDL) in the service literature [1]. From Vargo and Lusch [2] to more recent studies by Grönroos and Voima [3] and Lusch and Nambisan [4], papers discuss the importance of resource integration and how to incorporate different actors in the value creation process to facilitate the generation of value-in-use [2]. However, they rarely look at value co-creation from the user's point view. Our study addresses this need.

In the literature, value co-creation is thought to occur through interaction between the service provider and the service user. This process is also linked to the user's service experience and the intangibility of the services; that is, the service happens at a certain time, in a designated place, and cannot be stored in situ. Grönroos and Voima [3] philosophized this process further by referring to the customer as the value creator

who chooses or, more specifically, invites, the service provider into direct interaction with her or him in order to co-create value together. Thus, the service provider may also become an active co-creator of value. Alternatively, there is discussion of different actors joining in to the value co-creation process. Lusch and Nambisan [4] explore this with their view of service innovation in which actor-to-actor networks offer service platforms for resource integration, that is, for co-creation of value. In a similar tone, Breidbach and Maglio [5] further investigate this compound as a service ecosystem, including how industry actors contribute to value co-creation by taking different roles, using different resources, and carrying out practices. While some researchers, such as Payne et al. [1], look more specifically at how customers co-create value, the research still tends to focus on enterprises as actors interacting with other similar entities.

Missing from the literature is an inspection of co-creation of value focused on the user level. Tuunanen et al. [6] have argued that value co-creation for users is an interplay of at least two issues. First, a service system offers value propositions to the users, and, second, the users possess values or goals that drive their behavior. Service systems are defined as “value-co-creation configurations of people, technology, value propositions connecting internal and external service systems, and shared information” [7].

Tuunanen et al. [6] highlight the utilitarian and hedonic value and goals of system use. However, the literature on system use tends to be tilted toward a focus on utilitarian aspects, while the hedonic aspects have only been highlighted in recent years. Van der Heijden [9] was one of the first to make such a distinction between hedonic and utilitarian value in system use. In the same vein, Kahneman et al. [8] have suggested that users derive not only utility from system use but also hedonic benefits and goals. Van der Heijden [9] further argues that two types of motivation for system use can be determined: extrinsic and intrinsic. If a user is motivated extrinsically, he or she is driven by the expectation of a reward or benefit that is external to the system–user interaction [9], that is, utilitarian values. Intrinsic motivation, in turn, is based on the process of a certain activity rather than

the enjoyment of using the system [10]. Instead, the intrinsically motivated user wants to perform the activity “for no apparent reinforcement other than the process of performing the activity per se” [11:1112] and is, thus, driven by hedonic values. Therefore, the interaction with the system can be seen as a sufficient reason to use the system [12].

Our paper seeks to fill the above-recognized gap in the literature. Our objective is to unbox the co-creation of value for service system use by investigating hedonic and utilitarian drivers of the service system users. Consequently, our research question is as follows: *How do service systems differ in terms of users’ hedonic and utilitarian value drivers?* More specifically, our study looks at five different service systems and applies a qualitative research approach to investigate how these systems enable co-creation of value from the viewpoint of individual system users. We have collected data by conducting 113 laddering interviews [13-16]. The data was analyzed and coded according to hedonic and utilitarian value definitions.

Our study contributes by depicting how value structures of users differentiate between systems. It is interesting to note that while some of the systems are perceived as highly utilitarian, the value drivers for system use vary between the systems. Similarly, while some systems are perceived to be hedonic by nature, they nonetheless have a strong utilitarian undercurrent as drivers for system use.

The remainder of the paper is structured as follows. First, we review the literature of the SDL foundations with a focus on value co-creation. Next, we look into both the conceptual levels and the user perspective of value co-creation. Subsequently, we present our research methodology and the findings from the study. Finally, we discuss the implications of the findings and conclude with a summary of the study.

2. Literature review

2.1. Foundations of SDL

Traditionally, the literature has viewed value creation as an action where firms sacrifice resources in order to pursue benefits [17] by exchanging value with customers [18]. Such a firm-centric view of service orchestration regards customers as mere consumers of value and objects of marketing, while companies ultimately determine what is of value to customers [19].

Prahalad and Ramaswamy [19, 20] presented a new view of value creation by stating that unique and cooperatively created value is produced by involving customers in firms’ processes. Consequently, firms

should regard the interactions between consumers and providers as key to value co-creation [19]. In the same vein, Vargo and Lusch [2] suggested a shift from the firm-centered goods-dominant logic toward service as the fundamental unit of exchange. They introduced the SDL depicting that value is derived from service use and always co-created and determined by the customer contextually and phenomenologically [2].

Business research has tended to measure value as value-in-exchange, but divergent measures have recently emerged that define value, for instance, through an extrinsic-intrinsic or hedonic-utilitarian division [e.g., 9, 22] and through service experience [e.g., 23]. The SDL [2] provides a customer-centric view of value creation, which focuses on the *use* of an offering. Vargo and Lusch [2] positioned service as the foundation for exchange between firms and customers, where the customer as the beneficiary determines all value in use of the service. Hence, the value of a service or a good does not exist by itself but is rather derived from the customers’ perceived contextual experiences that it enables [see, e.g., 23, 24].

According to SDL, value co-creation is a service-for-service exchange, where companies offer value propositions to customers who may accept the proposition by integrating their own resources and co-creating value-in-use. Here, *service* is explained as the application of possessed resources for the benefit of another entity. Consequently, value co-creation is a collaborative process [19] of resource integration between benefit-pursuing entities [2]. Such entities can be considered as generic actors [25] or service systems that are connected to each other by value propositions [26]. This resource integration process is a key function of SDL.

2.2. Conceptual levels of value co-creation

In accordance with SDL, value is created through combined actions and processes rather than customers’ and firms’ separate actions. In such processes, actors conduct deeds, processes, and performances by applying operand resources, such as knowledge and skills, on tangible and substantial operand resources [26]. The co-created value is regarded as an improvement in a system’s well-being, which is measured by the system’s capability to fit into its environment [26:49].

As SDL takes an all-encompassing and holistic view of value co-creation—that value is always co-created by the customer’s and firm’s simultaneous actions [2]—Grönroos and Voima [3] take an interaction view and argue that value can only be co-created in a joint co-creation sphere between the service parties (customer and provider). Contrasting

with the SDL view, they state that value can be created by the customer with no interaction with the firm, but it can only be co-created if the firm manages to penetrate the customer's value creation sphere and engage the customer in direct interaction. This service logic lens provides an analytical understanding of the action and interaction spheres before, during, and after the course of service provision.

Furthermore, the literature recognizes service systems as multi-actor networks and multiple service ecosystems [27, 28]. This systemic view integrates multiple actors into the value co-creation process. Lusch and Nambisan [4] explore the concept of service innovation with the SDL lens and depict that mutual value creation occurs in a "relatively self-contained, self-adjusting system of mostly loosely coupled social and economic (resource integrating) actors connected by shared institutional logics and mutual value creation" [4:162]. The resource integration processes and activities fuse service systems' efforts in value co-creation.

Furthermore, the concept of value co-creation may be regarded as customer involvement in the production of the core offering of the service, for instance, the design or development phase [29]. Such a level of investigation may be considered as co-production, a sub-notion of value co-creation [30]. Co-production [e.g., 31], co-development [e.g., 1], and co-design [e.g., 32] of service components may provide opportunities for value co-creation, yet the conceptual understanding of value co-creation should not be limited solely to the co-production of value [30]. Because the implications of involving users in service design, development, and provision phases are relevant for service science research, the focus often remains on users' labor and its value implications [31] and conditions that lead to such benefits [33] from the company perspective.

2.3. The user perspective on value co-creation

Technology-assisted/enabled value co-creation is still poorly understood [5]. As the all-encompassing lens of SDL considers value co-creation processes as similar between all types of service systems, the literature lacks discussion regarding value co-creation on the particular level of the user perspective. Tuunanen et al. [6] take the user perspective when investigating value co-creation in consumer information systems (CIS) development. They presented a conceptual framework for CIS development that dissects system value propositions ((1) construction of identities, (2) social nature of use, and (3) context of use) and complements users' value drivers ((1) participation in service production, (2)

service process experience, and (3) goals and outcomes). Tuunanen et al. [6] argue that value co-creation can be established in a supplementing interplay between the users' value drivers and the system value propositions.

The CIS development framework takes a user experience perspective by understanding that value is co-created and determined by customers in accordance to user participation (e.g., co-production activities), experienced flow of the service process, and individual goals of use. Consistent with customer-centric service measures as extrinsic and intrinsic value [9], Tuunanen et al. state that users' goals may be hedonic or utilitarian [6].

Utilitarian (i.e., productivity-oriented) values represent pursued benefit-driven use as a means to an end. Hedonic values comprehend pleasure-oriented use, where the use itself is aspired to and could be characterized with fun, novelty, aesthetics, and unexpectedness [9]. In the same vein, Van der Heijden [9] divides users' goals of systems use into utility-oriented and hedonic-oriented goals, and Valkonen et al. [12] find that systems may inherently comprehend both utilitarian and hedonic values. Valkonen et al. [12] argue that as the user perceives the required level of utilitarian value being achieved, hedonic values become dominant and, thus, the ultimate driver of use. Accordingly, the interaction with the respective system may as such stir the use of the system.

3. Research methodology

We have applied the laddering interview technique for collecting data, which is based on the Personal Construct Theory (PCT) [34]. PCT enables us to understand how and why people see the world in different ways. Kelly [34] argued that by understanding the relationships between the states of the universe, the consequences of the states, and the impact of the consequences to the personal values of individuals, we can infer how individuals observe and interpret things and events in life. Additionally, the personal construct systems describe not only the properties and operation of the connected things and events but also the consequences of those and their effect on the individual's values. The laddering interviewing technique operationalizes PCT by providing a means to investigate system attributes, consequences (reasoning) for system use, and values and/or goals that drive the use [13-16].

Our study is based on the analysis of data, which was collected in five studies [35-39] that used the CIS framework for different kinds of service systems and used an identical research methodology to conduct the studies. We applied theoretical sampling to have both

business-to-business and customer-to-customer service systems in the study and worked with the local industry and organizations to gain access to their service system users. Hänninen [35] used the CIS framework for a study of an intelligent cyber physical system for mining, and Korpinen [36] used the framework for the development of an online customer relationship management (CRM) system. Kaaronen [37], in turn, studied an online event organizing and planning system. Huttu [38] and Vartiainen and Tuunanen [39] studied value co-creation for the consumer-related service systems of metal detecting and geocaching hobbies, respectively. One of the authors was involved in all of the studies and also supervised the students' thesis work.

The numbers of the laddering interview chains (data units) and interviewees per each study are depicted in Table 1. Examples of laddering interviews are described, for example, in [13-15].

Table 1. Data set

Study	Chains	n
Geocaching	336	26
Metal detecting	478	24
Intelligent cyber physical system for mining	266	20
Event organizing and planning system	321	22
Online CRM	287	21
Sum	1688	113

3.1. Data analysis

In each of the studies, the researcher developed codes for attribute, consequence, and values/goal items of the laddering interview chains. The aggregated data set totaled 3005 data units, which were derived from the original chains. These codes were later used for the clustering analysis as depicted in [13-15], for example. For the meta-analysis for this study, we did not use the previous clustering data analysis results, but instead we re-coded the laddering chains according to either hedonic or utilitarian value creation activities and behavior.

For this purpose, we checked all laddering chain codes of the data set and the coherence of the attribute, consequence, and value codes of the chains. First, two of the authors performed the re-coding individually, which was followed by a collective review of the proposed changes. The changes in the codes of each study are presented in Table 2. Most of the changes were suggested by both coders mutually (64%–79%). The conflicts were resolved via consensus by the two coders, and finally they were evaluated by the third author of the paper (no changes made). In total, 196 changes were made in the original data set, but only 48

of the changes were proposed by a single coder. Thus, the overall agreement level was exceptionally high, which reflects the overall quality of the data set and the coding process and protocol used.

Table 2. Changes in original data codes

Study	Changes	Both	Single
Geocaching	9	78%	22%
Metal detecting	14	79%	21%
Intelligent cyber physical system for mining	58	78%	22%
Event organizing and planning system	73	79%	21%
Online CRM	42	64%	36%

Because all of the data were reviewed, we aggregated and standardized the data so that all the headings and stimuli themes were in the same format. To enable the comparison of the values, we classified them into three value types: hedonic, utilitarian, and hybrid. While classifying each value, we used information from the whole chain; hence, a single value code could be placed in different classes in different chains. The hybrid value type was formed because some of the values could not be classified directly to the hedonic or the utilitarian class, but the data unit contained both views. In Table 3 we depict some exemplars of coding for different value types, including the source of the chain in question.

Table 3. Exemplar coding for value types

Value Type	Attribute	Consequence	Values or Goals
Hedonic [39]	Caching as non-serious phenomenon	Finding the cache	Feeling of success
Utilitarian [35]	Environmental monitoring	Can make decisions based on data	Cost-effectiveness
Hybrid [38]	Find information	More information out of the find and context	Social relationships and identification

4. Findings

In the following, we present the findings from the data analysis. In Tables 4–9, we present the findings according to the specific case studies and CIS themes to which the values and goals of the participants were linked in the data analysis. These CIS themes are as follows:

1. construction of identities;
2. social nature of use;
3. context of use;
4. participation in service production;
5. service process experience;
6. goals and outcomes.

Table 4 summarizes all mapped values for the five studies [35,-39] based on the themes. All 1,960 individual values or goals of the participants were mapped against the abovementioned six themes. From the distribution of the values, we can observe that construction of identities (#1) has the smallest (5%) portion of observations. However, it is interesting to see that one of the B2B-oriented studies (event planning and organizing system) has more than twice (11%) the number of observations than the other studies. This may reflect the nature of the given system in question because, with the event planning system, the identities of event speakers, hosts, and participants are highly visible to the system users.

Another interesting finding is that the users of an intelligent cyber physical system for mining thought that the service process experience (#5) merited the most (47%) contribution toward value co-creation, but social nature of use (#2) (25%) was also important. In the metal detecting and geocaching hobbies, we see more interest in the three last themes (#4-6) in general, with the exception of geocaching for the participation in service production (#4) theme.

Also, the distribution of the values between the themes and the studies is noteworthy. With the exception of the construction of identities (#1) theme, there is no clearly observable pattern; instead, the value distributions within the study vary. We further investigate this by dissecting the value distributions for hedonic, utilitarian, and hybrid values, which are reported, respectively, in Tables 5-7.

Table 5 reports the hedonic distribution of values for the studies. Here, we started to see more evident differences between the studies. Not surprisingly, the systems with mainly a B2B orientation are less represented in the findings than the more leisure-oriented systems of metal detecting and geocaching hobbies. However, it is intriguing to see that for the event planning system, an evident undercurrent of hedonic values is driving co-creation of value for its users. Similarly, there are some indications that the online CRM system users benefit from hedonic-value-driven co-creation. With the metal detection and geocaching systems, we observe that hedonic values neither dominate nor have a strong influence. In geocaching, nearly all values are hedonic, whereas in metal detection, 47% of values are hedonic. Here

again, we observe different patterns among the two studies. The only similarity is that both have a small (4%) portion of the hedonic values attached to construction of identities (#1). Otherwise, the emphasis between the themes varies so that while, for instance, social nature of use (#2) is important to metal detecting and the co-creation of value (19%), it is less important to geocachers (9%). Similarly, the context of use (#3) is less important to metal detecting (6%), whereas it is of relatively higher importance to geocachers (18%). Finally, we can also see that service process experience (#5) is the most important hedonic value for geocachers (40% of all values).

Table 5 provides an overview of the hedonic value distribution between the themes. From the results, we can see that themes for service process experience (#5) (30%) and goals and outcomes (#6) (23%) collect more than half of the values in the studies with an emphasis on the two hobby activities. Thereafter, participation in service production (#4) (16%) and social nature of use (#2) (16%) are similarly important. The context of use (#3) (11%) and construction of identities (#1) (4%) remain the two least important themes.

In Table 6, we see the distribution of utilitarian values. Here the value distribution is more focused on the B2B systems, namely, the online CRM system, the intelligent cyber physical system for mining, and the event planning and organizing system. However, we can see that more than half (53%) of the values of the metal detection system were linked to utilitarian observations for value co-creation. This was unexpected. In geocaching, only some values were linked to utilitarian purposes, which is in line with the activity itself; geocaching is a hobby that people do for leisure and relaxation.

While all of the B2B systems vary in their distribution of value between the themes, some observations can be made. First, the social nature of use (#2) seems to be important to all three B2B systems. We expected such a pattern to be present in the hobby activities, but less so in the utilitarian purpose-oriented systems. For the intelligent cyber physical system for mining, we also see that while social nature of use (#2) (25%) and context of use (#3) (21%) are important, the value co-creation with the service system is dominated by the service process experience (#5) (47%).

Table 7 summarizes hybrid values that had characteristics of both hedonic and utilitarian values. The distributions here are focused on the three last listed systems, that is, event planning and organizing, metal detecting, and geocaching, which were also emphasized for hedonic value distributions for the themes. From this, we can infer that the hybrid values

have similar implications to value co-creation as the values characterized as hedonic.

Next, we look into the findings on two specific studies: the metal detecting and geocaching hobbies (cf., Tables 8 and 9). These two cases were selected for closer examination because they showcase systems that are impacted by both hedonic and utilitarian values for co-creation. The similarities between the two cases merely entail the construction of identities, which both studies seem to include but which have only marginal impact on the value co-creation. Our expectation was that these two studies would have similar patterns because both of them are characterized as hobby activities and have some competitive aspects. Furthermore, both activities are done in small groups of people.

The findings show something different. The geocaching hobby is mostly dominated by co-creation of hedonic values (77%), and only some utilitarian values (2%) emerged from the data. Hybrid values balance the situation at some level (21%). With the metal detecting hobby, the value distributions are balanced among 43.5% hedonic values, 46.5% utilitarian values, and 10% hybrid values. Distribution of values for the six themes also varies between the two studies.

When looking more carefully at the results of the metal detecting study (Table 8), we can detect some similarities in the value patterns; for example, the participation in service production (#4) is important (22%). The same can be noted for the goals and outcomes (6#) theme (29%), which emerges as the most important theme for the metal detecting hobby. In both of these themes, nearly an equal number of hedonic and utilitarian values are present. In addition, both themes have a relatively large number of hybrid values (28% and 27%, respectively). Together, these themes represent 51% of the values. If we look at the distribution of values within themes, we note that for participation in service production (#4), 46% (73 out of 158) was considered hedonic only and 41% utilitarian only (65 out of 158). The rest were a hybrid of both. For the goals and outcomes (#6) theme, the percentage was 38% (80 out of 209) for hedonic, 53% (110 out of 209) for utilitarian, and 6% (19 out of 209) for hybrid values. Some other themes are more clearly biased towards either hedonic or utilitarian values. An example of a utilitarian bias is the context of use (#3) with only 22% (19 out of 83) of the values considered as hedonic only.

The case of the geocaching hobby remarkably differed in comparison to the metal detecting hobby, as summarized in Table 9. While geocaching is clearly dominated by hedonic values (77%), the difference is even greater when hybrid values are also accounted for

(98% of all values). Utilitarian values are clearly less important to geocachers versus metal detecting hobbyists, for example. Noteworthy insights can also be observed from the emphasis of themes between the cases. To our surprise, the social nature of use (#2) was relatively unimportant for geocachers (11% of all values), although geocaching itself is a social activity. In addition, participation in service production (#4) was considered not important (9%).

Another unexpected finding was that the context of use (#3) is important to geocachers (19% of all values). This may, however, reflect the importance of the location where geocaching is pursued and that geocachers feel they can extract more value from the activity in a location of their choice versus geocaching in randomly indifferent locations. Naturally, the geocaches themselves are located in specific places, so this finding can also infer that geocachers naturally connect geocaches to specific locations. Finally, the clear drivers for geocaching were service process experience (#5) (36%) and goals and outcomes (#6) linked to the geocaching itself (21%).

5. Discussion

The earlier literature on value co-creation has highlighted several important aspects that enable such activity between the users and the service system. Prahalad and Ramaswamy [19, 20], for example, have argued the importance of involving customers in firms' processes. Vargo and Lusch [2], in turn, argued that value is gained from service system use and that it is contextually and phenomenologically determined by the customer [2, 21]. Consequently, the SDL literature has argued that value co-creation is a service-for-service exchange, where companies offer value propositions to customers who may accept the propositions by integrating their own resources and co-creating value-in-use. This has led to a more finely grained debate in the literature about resource integration between benefit-pursuing entities [2].

Our study takes a user-focused perspective on value co-creation. While there is literature that touches on this perspective, such as Grönroos and Voima [3] who argue that value can only be co-created in a joint co-creation sphere between the customer and service provider, this typically does not further elaborate on how value co-creation is experienced by the service system user.

To investigate this, we build on the framework for CIS development created by Tuunanen et al. [6], which makes the argument that value co-creation can be enabled by the interplay between the users' value

Table 4. All values across the cases

Case/Theme	1	2	3	4	5	6	Sum
Online CRM	3% (9)	33% (98)	5% (15)	24% (70)	14% (42)	21% (61)	295
Intelligent cyber physical system for mining	4% (11)	25% (70)	21% (58)	0% (0)	47% (131)	3% (8)	278
Event planning and organizing system	11% (35)	29% (92)	10% (26)	15% (47)	19% (60)	17% (54)	314
Metal detecting hobby	3% (24)	16% (112)	11% (83)	22% (158)	19% (136)	29% (209)	722
Geocaching hobby	4% (13)	11% (40)	19% (65)	9% (30)	36% (128)	21% (75)	351
Sum	5% (92)	21% (412)	13% (247)	16% (305)	25% (497)	21% (407)	1,960

Table 5. Hedonic value distribution across the cases

Case/Theme	1	2	3	4	5	6	Sum
Online CRM		31% (4)		8% (1)	46% (6)	15% (2)	13
Intelligent cyber physical system for mining							0
Event planning and organizing system	4% (1)	38% (10)	12% (3)	12% (3)	23% (6)	12% (3)	26
Metal detecting hobby	4% (12)	19% (61)	6% (19)	23% (73)	22% (70)	25% (80)	315
Geocaching hobby	4% (11)	9% (25)	18% (48)	8% (21)	40% (108)	21% (57)	270
Sum	4% (24)	16% (100)	11% (70)	16% (98)	30% (190)	23% (142)	624

Table 6. Utilitarian value distribution across the cases

Case/Theme	1	2	3	4	5	6	Sum
Online CRM	3% (9)	33% (94)	5% (15)	24% (69)	13% (36)	21% (59)	282
Intelligent cyber physical system for mining	4% (11)	25% (70)	21% (58)	0% (0)	47% (130)	3% (8)	277
Event planning and organizing system	11% (28)	29% (75)	8% (21)	16% (41)	19% (51)	18% (47)	263
Metal detecting hobby	3% (12)	13% (42)	16% (54)	19% (65)	15% (53)	33% (110)	336
Geocaching hobby			17% (1)		50% (3)	33% (2)	6
Sum	5% (60)	24% (281)	13% (149)	15% (175)	23% (273)	19% (226)	1,164

Table 7. Hybrid value distribution across the cases

Case/Theme	1	2	3	4	5	6	Sum
Online CRM							0
Intelligent cyber physical system for mining					100% (1)		1
Event planning and organizing system	24% (6)	28% (7)	8% (2)	12% (3)	12% (3)	16% (4)	25
Metal detecting hobby		13% (9)	14% (10)	28% (20)	18% (13)	27% (19)	71
Geocaching hobby	3% (2)	20% (15)	22% (16)	12% (9)	22% (17)	22% (16)	75
Sum	5% (8)	18% (31)	16% (28)	19% (32)	20% (34)	23% (39)	172

Table 8. Value distribution by types for metal detecting

Type	1	2	3	4	5	6	Sum
Hedonic	4% (12)	19% (61)	6% (19)	23% (73)	22% (70)	25% (80)	43.5% (315)
Utilitarian	3% (12)	13% (42)	16% (54)	19% (65)	15% (53)	33% (110)	46.5% (336)
Hybrid		13% (9)	14% (10)	28% (20)	18% (13)	27% (19)	10% (71)
Sum	3% (24)	16% (112)	11% (83)	22% (158)	19% (136)	29% (209)	722

Table 9. Value distribution by types for geocaching

Type	1	2	3	4	5	6	Sum
Hedonic	4% (11)	9% (25)	18% (48)	8% (21)	40% (108)	21% (57)	77% (270)
Utilitarian			17% (1)		50% (3)	33% (2)	2% (6)
Hybrid	3% (2)	20% (15)	21% (16)	12% (9)	23% (17)	21% (16)	21% (75)
Sum	4% (13)	11% (40)	19% (65)	9% (30)	36% (128)	21% (75)	351

drivers and system value propositions. While Tuunanen et al. recognize that users' goals may be hedonic or utilitarian, they do not further detail how these might impact the depicted users' value drivers and system value propositions in the CIS framework.

This perspective differs from the extant view of value co-creation in the literature where service systems are typically looked at as multi-actor networks and service platforms [4, 25, 28]. Although some examples of literature partly address the argument, they look more into co-production [e.g., 31], co-development [e.g., 1], and co-design [e.g., 32] of services. Each of the foregoing arguably offers opportunities for value co-creation. However, they focus on *in situ* issues that impact users' and the service system's service realization, users' participation in the service production, or service design matters relating to the provider's service development activities rather than value co-creation during the use of a service system. Furthermore, so far, the extant literature has not inspected different types of values (hedonic, utilitarian, hybrid) co-created during the service system use within a single study nor has there been a study available comparing different types of service systems in this regard.

Consequently, we argue that our findings provide a novel and new perspective of value co-creation at the service system level and also between systems. Our findings reveal that all five service systems are differently structured in terms of how users perceive how value is co-created. We foresaw that there should be clear differences in value types between B2B service systems and more consumer-oriented service systems, which was supported by our findings. Furthermore, unexpected differences in value type emphases were found between similar types of service systems.

Table 4 summarizes differences in distributions of recognized values by the participants among the six CIS themes. We depict different emphases of the CIS themes in each service system. This concurs with Tuunanen and Kuo's [14] argument that system features should be prioritized according to the value structures of the users. Moreover, our findings suggest services should be designed according to such value structures rather than system types. The implication of this finding is that the CIS framework and the applied research methodology enable researchers and practitioners to recognize which aspects of value co-creation are more important to the users than others, allowing development and design efforts to be directed accordingly. The use of the CIS framework also facilitates assessment of users' perceptions of a service, for instance, comparisons between major versions of a deployed service system. This

assessment allows the firm to investigate whether the added or changed (or removed) features of the system (for system value propositions) have an impact recognized by the users. Similarly, changes to the users' drivers with regard to the service system use can be recognized. Therefore, the CIS framework provides a benchmarking tool for estimating how the service system enables co-creation of value.

We also investigated how values were distributed among the studies, the CIS themes, and the three types of values (hedonic, utilitarian, and hybrid), as summarized in Tables 5–7. The findings show that B2B service systems are driven more by utilitarian-based value co-creation between the users and the service systems. Similarly, the leisure-oriented metal detecting and geocaching are driven by more hedonic-based value co-creation activities between the users and the service systems. The analysis of the impact of the hybrid values supports each of these arguments as well. This result confirms the earlier argument [12] that a system's use inherently comprehends both utilitarian and hedonic values, at least for co-creation of value as argued here. Valkonen et al. [12] also argued that there is a continuum of utilitarian and hedonic values as drivers for system use. The application of the CIS framework provides researchers and practitioners a tool to estimate where the service system is located in the value continuum at any given moment.

Finally, the closer analysis of two of the studies reported in Tables 8 and 9 provide further insights into how values are distributed with regard to the three value types. The metal detecting study is particularly interesting as it depicts a service system where hedonic and utilitarian values are nearly in equal balance. By scrutinizing the value distributions, we find that the study participants in many of the CIS themes perceive both hedonic and utilitarian values. On the other hand, the geocaching study showcases rather purely hedonic-driven service system use, although the recognized hybrid values indicate that there are also underlying utilitarian reasons for geocaching that impact co-creation of value.

6. Conclusions

Our study captures ways to unbox the concept of value co-creation from the service system user's point of view. To do this, we dissect users' hedonic and utilitarian drivers for value co-creation activities and behavior in five different service system contexts by using laddering interview data [13, 14, 15, 16]. More specifically, we attempt to assess how service systems

differ in terms of hedonic and utilitarian value drivers of their users.

Based on our findings, we can argue that there are clear differences in the value drivers between the service systems. Some of the systems are evidently perceived as more utilitarian- or hedonic-oriented while each of the service systems retain varying value drivers. An interesting undercurrent of hybrid values also exists that either characterizes the hedonic side of utilitarian service systems or vice versa for the more hedonic systems. Our study contributes by being one of the first to depict and highlight the differences in value-based motivations for users to co-create value. Our findings also show that the CIS framework can be used to benchmark users' actual or perceived value co-creation behavior with specific service systems or to compare such behavior between different service systems. Finally, the findings also confirm an earlier argument [12] that system use inherently comprehends both utilitarian and hedonic values and that these value types impact the system use.

Our study has some limitations that should be recognized. Due to space requirements, we were not able to fully depict the coding process used in the study. Instead, some exemplars are provided of how we have conducted the coding (cf., Table 3). Similarly, we were not able provide full details with the paper for the original laddering chain coding that was done in the individual studies. However, we do provide references to the individual studies, and the reader can access the original works. Therefore, we feel that sufficient transparency of the coding is achieved. One of the authors has taken part in all five studies, which has guaranteed a similar grounding in the field studies and consistency in data coding procedures.

In conclusion, we welcome researchers to join our effort to unbox value co-creation. We believe this will have an impact on the understanding of user behavior as well as how service systems should be designed so that they better enable value co-creation.

7. References

- [1] Payne, A.F., K. Storbacka, and P. Frow, "Managing the co-creation of value", *Journal of the Academy of Marketing Science* 36, 2008, pp. 83–96.
- [2] Vargo, S.L., and R.F. Lusch, "Evolving to a New Dominant Logic for Marketing", *Journal of Marketing* 68(1), 2004, pp. 1–17.
- [3] Grönroos, C., and P. Voima, "Critical service logic: making sense of value creation and co-creation", *Journal of the Academy of Marketing Science* 41(2), 2013, pp. 133–150.
- [4] Lusch, R.F., and S. Nambisan, "Service Innovation: A Service-Dominant Logic Perspective", *MIS Quarterly* 39(1), 2015, pp. 155–175.
- [5] Breidbach, C.F., and P.P. Maglio, "Technology-enabled value co-creation: An empirical analysis of actors, resources, and practices", *Industrial Marketing Management* 56, 2016, pp. 73–85.
- [6] Tuunanen, T., M.D. Myers, and H. Cassab, "A Conceptual Framework for Consumer Information Systems Development", *Pacific Asia Journal of the Association for Information Systems* 2(1), 2010, pp. 47–66.
- [7] Maglio, P.P., and J. Spohrer, "Fundamentals of service science", *Journal of the Academy of Marketing Science* 36(1), 2008, pp. 18–20.
- [8] Kahneman, D., A.B. Krueger, D.A. Schkade, N. Schwarz, and A.A. Stone, "A survey method for characterizing daily life experience: the day reconstruction method.", *Science (New York, N.Y.)* 306(5702), 2004, pp. 1776–1780.
- [9] Van der Heijden, H., "User Acceptance of Hedonic Information Systems", *MIS Quarterly* 28(4), 2004, pp. 695–704.
- [10] Kakar, A.K., "When form and function combine: Hedonizing business information systems for enhanced ease of use", *Proceedings of the Annual Hawaii International Conference on System Sciences*, 2014, pp. 432–441.
- [11] Davis, F.D., R.P. Bagozzi, and P.R. Warshaw, "Extrinsic and Intrinsic Motivation to Use Computers in the Workplace", *Journal of Applied Social Psychology* 22(14), 1992, pp. 1111–1132.
- [12] Valkonen, K., N. Lindström, L. Natunen, R. Isoviita, and T. Tuunanen, "Balance of hedonic and utilitarian values in information systems use", *Nordic Contributions in IS Research: 6th Scandinavian Conference on Information Systems, SCIS 2015*, International Federation of Information Processing (2015), 165–176.
- [13] Peffers, K., C.E. Gengler, and T. Tuunanen, "Extending Critical Success Factors Methodology to Facilitate Broadly Participative Information Systems Planning.", *Journal of Management Information Systems* 20(1), 2003, pp. 51–85.
- [14] Tuunanen, T., and I.-T. Kuo, "The effect of culture on requirements: a value-based view of prioritization", *European Journal of Information Systems* 24(3), 2015, pp. 295–313.
- [15] Tuunanen, T., and K. Peffers, "Population targeted requirements acquisition", *European Journal of Information Systems forthcomin*, 2018, pp. 1–26.
- [16] Reynolds, T.J., and J. Gutman, "Laddering theory, method, analysis, and interpretation", *Journal of Advertising*

Research Feb 28(1), 1988, pp. 11–31.

[17] Zeithaml, V.A., “Consumer perceptions of price, quality, and value”, *Journal of Marketing* 52(3), 1988, pp. 2–22.

[18] Grönroos, C., “Adopting a service logic for marketing”, *Marketing Theory* 6(3), 2006, pp. 317–333.

[19] Prahalad, C.K., and V. Ramaswamy, “Co-Creation Experiences: The next practice in value creation”, *Journal of Interactive Marketing* 18(3), 2004, pp. 5–14.

[20] Prahalad, C.K., and V. Ramaswamy, “The Co-Creation Connection”, *Strategy and Business* 27(27), 2002, pp. 50–61.

[21] Vargo, S.L., and R.F. Lusch, “Service-dominant logic: Continuing the evolution”, *Journal of the Academy of Marketing Science* 36(1), 2008, pp. 1–10.

[22] Holbrook, M.B., *Consumer value: a framework for analysis and research*, Routledge, London, 1999.

[23] Prahalad, C.K., and V. Ramaswamy, “Co-creating unique value with customers”, *Strategy & Leadership* 32(3), 2004, pp. 4–9.

[24] Woodruff, R.B., and D.J. Flint, “Marketing’s service-dominant logic and customer value”, In R.F. Lusch and S.L. Vargo, eds., *The Service-Dominant Logic of Marketing: Dialog, Debate, and Directions*. Routledge, New York, 2006, 189–195.

[25] Ekman, P., R.D. Raggio, and S.M. Thompson, “Service network value co-creation: Defining the roles of the generic actor”, *Industrial Marketing Management* 56, 2016, pp. 51–62.

[26] Vargo, S.L., P.P. Maglio, and M.A. Akaka, “On value and value co-creation: A service systems and service logic perspective”, *European Management Journal* 26(3), 2008, pp. 145–152.

[27] Chandler, J.D., and S.L. Vargo, “Contextualization and value-in-context: How context frames exchange”, *Marketing Theory* 11(1), 2011, pp. 35–49.

[28] Wieland, H., F. Polese, S.L. Vargo, and R.F. Lusch, “Toward a Service (Eco)Systems Perspective on Value Creation”, *International Journal of Service Science, Management, Engineering, and Technology* 3(3), 2012, pp. 12–25.

[29] Cova, B., D. Dalli, and D. Zwick, “Critical perspectives on consumers’ role as ‘producers’: Broadening the debate on value co-creation in marketing processes”, *Marketing Theory* 11(3), 2011, pp. 231–241.

[30] Lusch, R.F., and S.L. Vargo, “Service-dominant logic: Reactions, reflections and refinements”, *Marketing Theory*

6(3), 2006, pp. 281–288.

[31] Etgar, M., “A descriptive model of the consumer co-production process”, *Journal of the Academy of Marketing Science* 36(1), 2007, pp. 97–108.

[32] Sanders, E.B.-N., and P.J. Stappers, “Co-creation and the new landscapes of design”, *Co-Design* 4(1), 2008, pp. 5–18.

[33] Kristensson, P., J. Matthing, and N. Johansson, “Key strategies for the successful involvement of customers in the co-creation of new technology-based services”, *International Journal of Service Industry Management* 19(4), 2008, pp. 474–491.

[34] Kelly, G.A., *The psychology of personal constructs. Vol. 1. A theory of personality. Vol. 2. Clinical diagnosis and psychotherapy*, W. W. Norton, Oxford, England, 1955.

[35] Hänninen, J., *Cyber-physical systems as a platform for value co-creation*, M.S. thesis, Univ. of Jyväskylä, 2014.

[36] Korpinen, O., *B2b-asiakasportaali osana kokonaisvaltaista palvelua*, M.S. thesis, Univ. of Jyväskylä, 2014.

[37] Kaaronen, O., *Exploring the elements for value co-creation in consumer information systems in B2B context*, M.S. thesis, Univ. of Jyväskylä, 2014.

[38] Huttu, N., *Exploring value propositions and value drivers in task oriented information intensive online communities: case study - metal detecting find database*, M.S. thesis, Univ. of Jyväskylä, 2014.

[39] Vartiainen, T., and T. Tuunanen, “Co-creation of Value for IT-Enabled Services: A Case of Geocaching”, *46th Hawaii International Conference on System Sciences*, IEEE (2013), 1093–1102.